Space Weather Forecast

Issued on Tuesday, 06 August 2024 at 13:22 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate to High activity expected.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: High with two Strong flares (X-class) observed, the strongest from over the west limb and another from the large region in the southeast disc. This is the largest of the nine regions on the Earth-facing Sun, and is dominated by a very large leader spot, with a moderately sized trailer and a number of smaller spots to its south and west. Also of note is a moderately sized region in the south-centre disc. This has continued to see slow growth of spots within its intermediate area, while a further region to its east has also seeing some ongoing development but currently remains a simple bipolar group.

The Coronal Mass Ejections (CMEs) associated with the Strong flares have been assessed as missing. No other clear Earth-directed eruptions have been identified in imagery.

Solar Wind / Geomagnetic Activity: The slight enhancement on 04 Aug gradually eased with more typical background slow wind conditions returning. Solar wind speeds eased from elevated levels to be slightly elevated. Interplanetary Magnetic Field was Weak, while the north-south component was weak and variable in direction. Geomagnetic activity remaining Quiet (Kp0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) rose in response to the Strong flare on the Sun's west limb, however this did not reach the S1 Minor Radiation Storm level, and has since started to decline back towards background.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High solar activity is forecast to continue, with occasional Moderate-class flares expected and with a chance of isolated Strong-class flares.

Solar Wind /Geomagnetic Activity: There are no Earth-directed CMEs, with no coronal hole fast wind arrivals expected in the period. However, weak passing transients remain possible due to the number of off the Earth-Sun line eruptions that have occurred. Geomagnetic activity is forecast to be mainly Quiet with isolated Unsettled intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to ease back towards background through the next day or two, but with a chance of further enhancement given the occurrence of any notable flares. This gives a slight chance of reaching the S1 Minor Radiation Storm level.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	80	80	80	80
Very Active	R3 to R5 X	Yes	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	20	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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